Tooele Chemical Agent Disposal Facility (TOCDF)

Request for a

CLASS 3 MODIFICATION

to the

TOCDF RCRA Permit

Request Number:	TOCDF-IGLOO-03-0983
Request Title:	Igloos 1632 and 1634 Permitted Container Storage
EPA ID Number:	UT 5210090002

For the:

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)

Division of Solid and Hazardous Waste (DSHW)

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1. DESCRIPTION OF CHANGE

This Resource Conservation and Recovery Act (RCRA) Permit Modification Request proposes to add Deseret Chemical Depot (DCD) Area 10 "Igloos" 1632 and1634 to the TOCDF RCRA Permit as Permitted Container Storage Units. Currently, 59 DCD Area 10 igloos are included in the *DCD Area 10* RCRA Permit as Permitted Container Storage Units for Facility-generated secondary waste. Igloos 1632 and 1634 are not currently included in the DCD RCRA permitted storage for Area 10. DCD shares with TOCDF, along with the Chemical Agent Munitions Demilitarization System (CAMDS), the same United States Environmental Protection Agency (USEPA) I.D. number UT 5210090002.

The formal term for the igloo is "Steel Over-Arch Earth-Covered Magazine". The terms "magazine" and "igloo" are used synonymously throughout this modification request.

REGULATORY BASIS AND CLASSIFICATION

This Resource Conservation and Recovery Act (RCRA) Permit Modification Request proposes to add DCD Area 10 Igloos 1632 and 1634 to the TOCDF RCRA Permit as Permitted Container Storage. The TOCDF currently-permitted container storage areas are:

1. Container Handling Building (CHB)
2. Unpack Area (UPA)
3. Explosive Containment Room Vestibule (ECV)
4. Upstairs Munitions Corridor (UPMC)
5. S-2 Warehouse
6. Toxic Maintenance Area Airlock/Decon Area (TMA Airlock)
7. TMA Container Storage Area

The addition of Igloos 1632 and 1634 to this list will result in an increase to the TOCDF permitted container storage volumetric capacity of approximately 42.4% (i.e., "greater than 25%", see Table 1). Hence, this modification request is proposed as a Class 3 modification in accordance with 40 CFR 270.42(c) and §270.42 Appendix I, F.1.a, which is incorporated by Utah Administrative Code R315-3-4.3.

OVERVIEW

TOCDF has completed the majority of its overall mission to destroy the portion of the U.S. Army's chemical weapons stockpile that resides at the Deseret Chemical Depot. In anticipation of completion of chemical weapons, TOCDF is preparing to begin final closure activities, which includes the elimination of "secondary wastes" that have been generated since the beginning of treatment of the DCD chemical weapons stockpile.

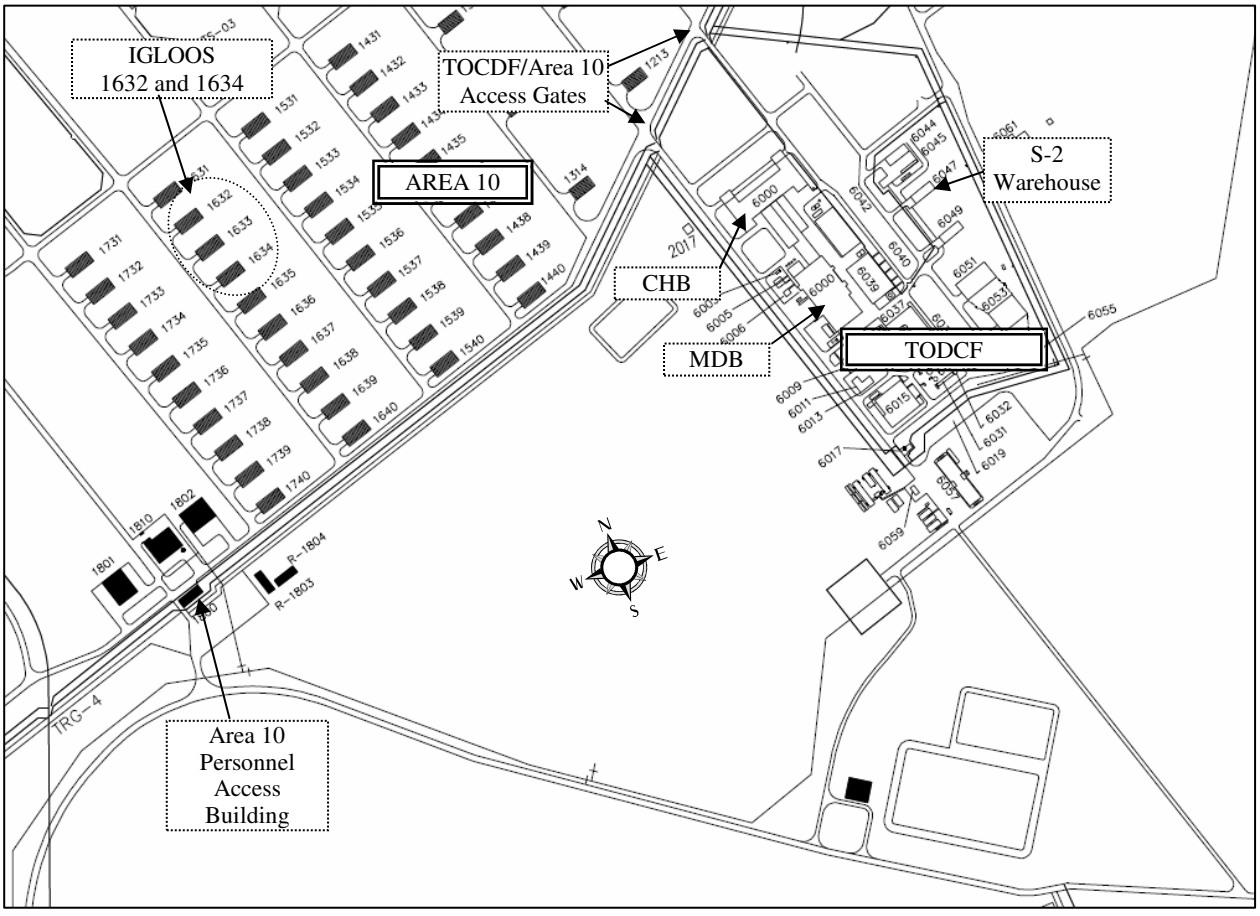
1. DESCRIPTION OF CHANGE (continued)

Much of the secondary waste generated at TOCDF has been declared hazardous, properly containerized, and returned to DCD Area 10 for storage over the course of the project. Examples of secondary wastes are 1) used personnel protective equipment, 2) contaminated tools and plant equipment, and 3) trash associated with decontamination of tools, personnel and equipment.

Previously used for munitions storage, many of the DCD Area 10 igloos have been permitted and are managed by *DCD* for the storage of *TOCDF*-generated hazardous waste. In order to more effectively perform waste management activities such as drum sampling and treatment, TOCDF is proposing to permit two of the Area 10 igloos (1632 and 1634) for hazardous waste container storage. The use of these two igloos for "buffer" storage will also enable TOCDF to more effectively receive, sort and stage waste containers while reducing reliance on DCD and potential impact on DCD operations.

These two particular igloos have been selected because they are adjacent to igloos being used by TOCDF for Mustard ton container sampling activities. They lie approximately 2000-2200 feet northwest of the nearest TOCDF double-fence boundary as shown in Figure 1. Figures 2 and 3 show typical interior and exterior views of the Area 10 igloos.

Figure 1 Area 10 Proximity to TOCDF



1. DESCRIPTION OF CHANGE (continued)

Figure 2 Exterior View of Area 10 Igloos

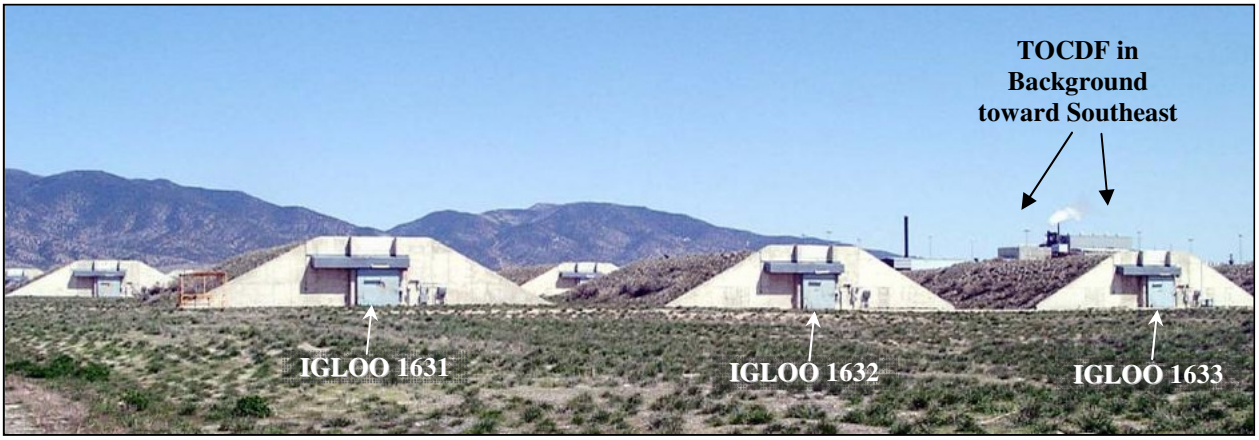


Figure 3 Interior View of Typical Steel Oval-Arch Earth-Covered Magazine

1. DESCRIPTION OF CHANGE (continued)

Table 1 Volumetric Summary of TOCDF Permitted Container Storage Units

TOCDF Container Storage Area	Limitations on Waste Types	Secondary Containment	Permit-Specified Requirements/Limitations in Addition to Generic Regulatory Requirements[1]	Maximum Volume of Containerized Waste[2] *(Permit Condition)*	55-gallon Drum Equivalent
CHB	Munitions and Bulk Containers Only	ONC/ Overpack	Munitions, Bulk Containers and their Overpacks Only	18,278 gallons VX *(III.C.1)*	332.3
UPA	Munitions and Bulk Containers Only	ONC/ Overpack or Pallets	Munitions, Bulk Containers and their Overpacks Only	3,424 gallons VX *(III.C.1)*	62.3
ECV	Munitions and Bulk Containers Only	Floor	Munitions and Bulk Containers Only	833 gallons VX *(III.C.1)*	14.8
UPMC	Munitions and Bulk Containers Only	Floor	Munitions and Bulk Containers Only	4,366 gallons VX *(III.C.1)*	79.4
S-2 Ware-House	Onsite (TOCDF) Generated Waste Only	Pallets	For free liquids, <600 gallons per SC pallet, <60 gallons per container	38,720 gallons containerized waste *(III.C.6)*	704.0
TMA Airlock	Munitions and Bulk Containers Only	ONC/ Overpack	Munitions and Bulk Containers Only	761 gallons VX *(III.C.1)*	13.8
TMA Container Storage Area	D002-D011, D018, D019, D021, D022, D035, D039, D040, D043, F001, F004, F005, U037, U131, U210, F999, P999 and agent-contaminated equipment and parts only	Floor	Waste Containers with agent contaminated equipment and parts only	2200 gallons containerized waste *(III.C.5)*	40.0
Total Combined **Currently Permitted** Waste Container Storage				**68,582 gallons**	**1246.9 drums**
Igloo 1632	Facility Generated Secondary Waste	Pallets/ Drip Pans/ Enclosures	Secondary Containment systems shall be loaded and operated per applicable manufacturer's or engineer's specifications.	14,520 gallons *(proposed in III.C.6)*	264.0
Igloo 1634	Facility Generated Secondary Waste	Pallets/ Drip Pans/ Enclosures		14,520 gallons *(proposed in III.C.6)*	264.0
Total Combined **Proposed Additional** Waste Storage				**29,040 gallons**	**528.0 drums**
Percentage Increase in Permitted Waste Container Storage on a Volumetric Basis				42.4%	

Notes:

1 Generic Regulatory Requirement include:

- Containers must be in good condition and be compatible with the waste
- Containers must be opened, handled and stored in a manner not conducive to leaks or rupture
- Containers must always be closed except when it is necessary to add or remove waste.
- Containers must have secondary containment protection if free liquids are present or specific "F" codes apply
- Container storage areas and secondary containment systems must be inspected weekly
- Container storage areas must comply with air emissions standards (R315-8-9.10 "Subpart AA, BB and CC").

2 All "gallon" units correspond to the standard U.S. Liquid Gallon, equivalent to 231 in^3.

1. DESCRIPTION OF CHANGE (continued)

PERMIT LANGUAGE APPROACH

The RCRA Permit language will need to be modified to incorporate the following:

1) Module III "Containers" will be revised to add Area 10 igloo descriptions and requirements. Allowable waste codes for the igloos will include those waste codes allowable in the S-2 warehouse as well as the allowable waste codes specified in the DCD RCRA permit for storage in the igloos (per DCD RCRA Permit condition III.B.1.a). Hazardous waste storage will not be permitted until the agent monitoring plan has been modified to incorporate an Igloo monitoring strategy.
2) Appendix B "Definitions" will be revised to clarify that the formal term "Facility" refers to the entire DCD installation (TOCDF, Area 10 and CAMDS) that possesses the State/EPA I.D. Number UT5210090002. This is necessary to draw the distinction between the RCRA definition subject to regulations and the informal general use of the word "facility" throughout the TOCDF Permit (e.g., the "F" in TOCDF)
3) Table 2 will be revised to add Igloos 1632 and 1634 as container storage areas, along with the waste types anticipated for the igloos.
4) Attachment 1 "Facility Description" will be revised to include Igloos 1632 and 1634 as part of the permitted TOCDF.
5) Attachment 4 "Security Procedures" will be revised to include Igloos 1632 and 1634 as part of the permitted TOCDF.
6) Attachment 5 "Inspections" and "Inspection Log Sheets" will be revised to add the Igloo 1632 and 1634 inspection requirements and weekly log sheets.
7) Attachment 8 "Preparedness and Prevention" will be revised to discuss the Igloo 1632 & 1634 aisle space requirements, signage requirements, ignition source prohibition, and various safety-related container management practices.
8) Attachment 9 "Contingency Plan" will be revised to incorporate DCD Area 10 Igloos 1632 and 1634.
9) Attachment 10 "Closure Plan" will be revised to add Igloos 1632 & 1634 to the TOCDF Hazardous Waste Management Units closure summary Table I-1-1. The Maximum Waste Inventory Table I-1-2 will be revised with the additional igloo storage capacity.
10) Attachment 12 "Containers" will be revised to add Area 10 igloo descriptions and requirements.
11) Attachment 22 "Agent Monitoring Plan" (AMP) will be revised via a separate modification, prior to storage of hazardous waste in Igloos 1632 and 1634. No changes are proposed to the AMP in this modification.

2. JUSTIFICATION FOR CHANGE

Regulatory Requirements for Storage of Hazardous Waste Containers

The regulatory requirements applicable to TOCDF regarding the storage of hazardous waste containers appear in the Utah Administrative Code UAC R315-8-9 "Use and Management of Containers". Closely resembling 40 CFR 274 Subpart I, the R315-8-9 requirements are generally divided into the following categories:

1) Requirements for the *Design* of containers
2) Requirements for the *Use and Management* of containers
3) Requirements for the *Design* of the Secondary Containment systems
4) Requirements for the *Use and Management* of the Secondary Containment systems.

The design and use of containers is not proposed to be changed via this modification proposal. Two additional storage units (Igloos 1632 and 1634) are proposed to be added to the existing list of permitted storage areas. The following describe the pertinent design features of the igloos as well as the proposed strategy for managing the containers within them.

Munitions Storage Igloos

DCD Area 10 is comprised of approximately 218 storage building "magazines" that were designed and constructed for the storage of explosives, chemical weapons and bulk containers. These chemical weapons storage "igloos" are spaced at distances relative to one another in accordance with Army regulations. Earth-covered magazines are utilized primarily to prevent propagation of an explosion to an adjacent magazine.

The headwalls and backwalls of Igloos 1632 and 1634 are constructed of 1'-0" minimum thick reinforced concrete. The side walls and roof are of 1-gauge corrugated steel plate and covered with a minimum of 2-foot of earth. These igloos possess a 24'-10" x 89'-0"nominal, 6-inch minimum thick reinforced planar concrete slab floor. Lateral slab construction joints are placed a maximum of 20-feet apart and there is only one longitudinal joint that extends down the middle of the floor. The entire floor slab is sloped 1":15' (approximately 1/180 slope) toward the single access door located at one end of the igloo. This results in an overall slab elevation rise from the entrance to the back of the igloo of about 6 inches.

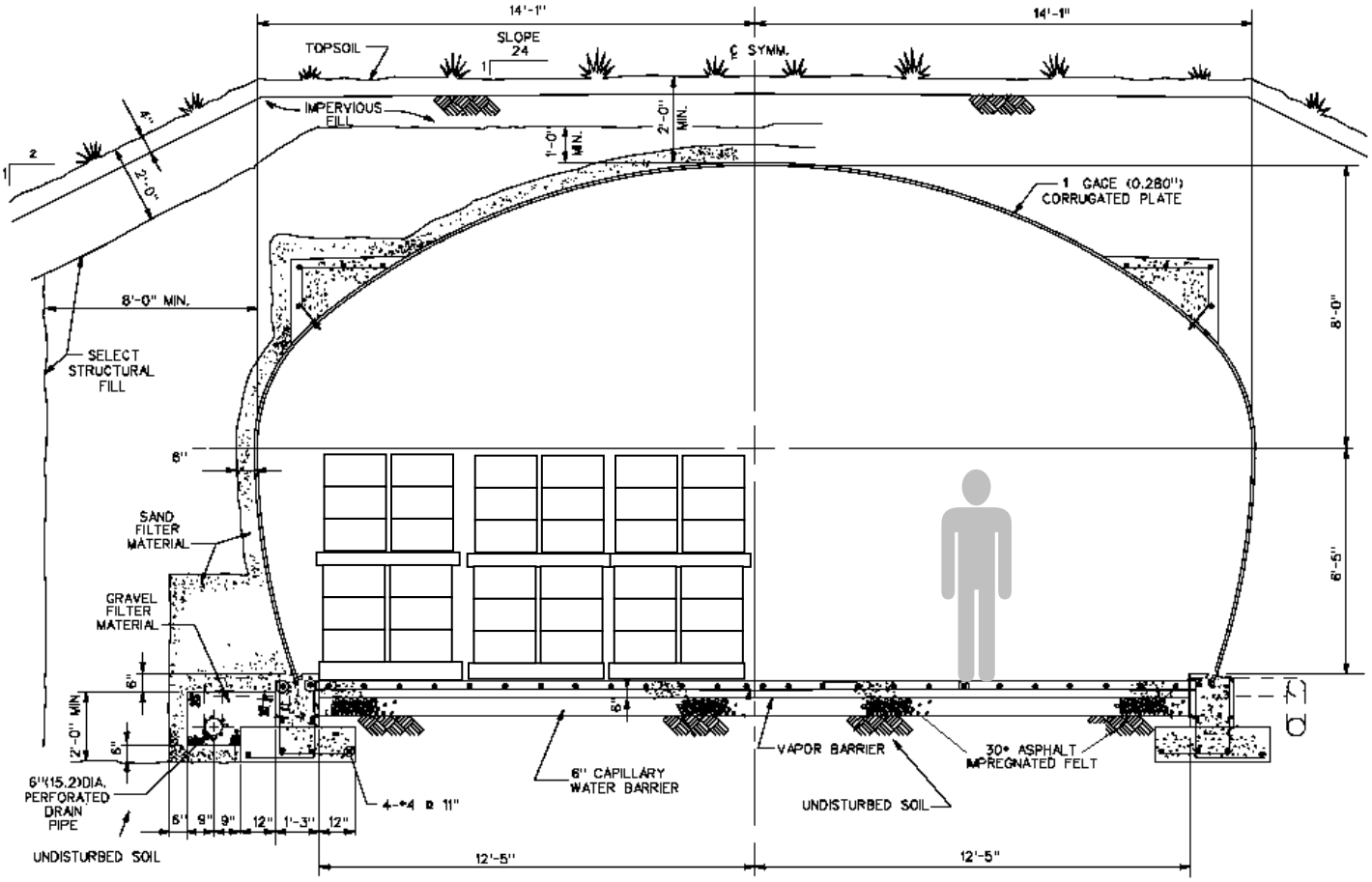
The entire floor is underlain with a vapor barrier and a 6"-thick capillary water barrier between the concrete and the undisturbed soil grade. In addition, drainage is provided by an encircling 6-inch diameter perforated drainage pipe within a gravel-backfilled trench, about 18-inches from the igloo's foundation.

2. JUSTIFICATION FOR CHANGE (continued)

The roof of the igloo is comprised of a 1-gage (approximately 0.280"-thick) corrugated-steel layer fabricated from multiple sections. The entire design of the igloo was developed with the goal of protecting the igloo contents from precipitation. Joints are sealed and the earth covering is engineered to specifically prevent water accumulation against the steel roof. The entire floor slab surface rests above the exterior grade of the igloo.

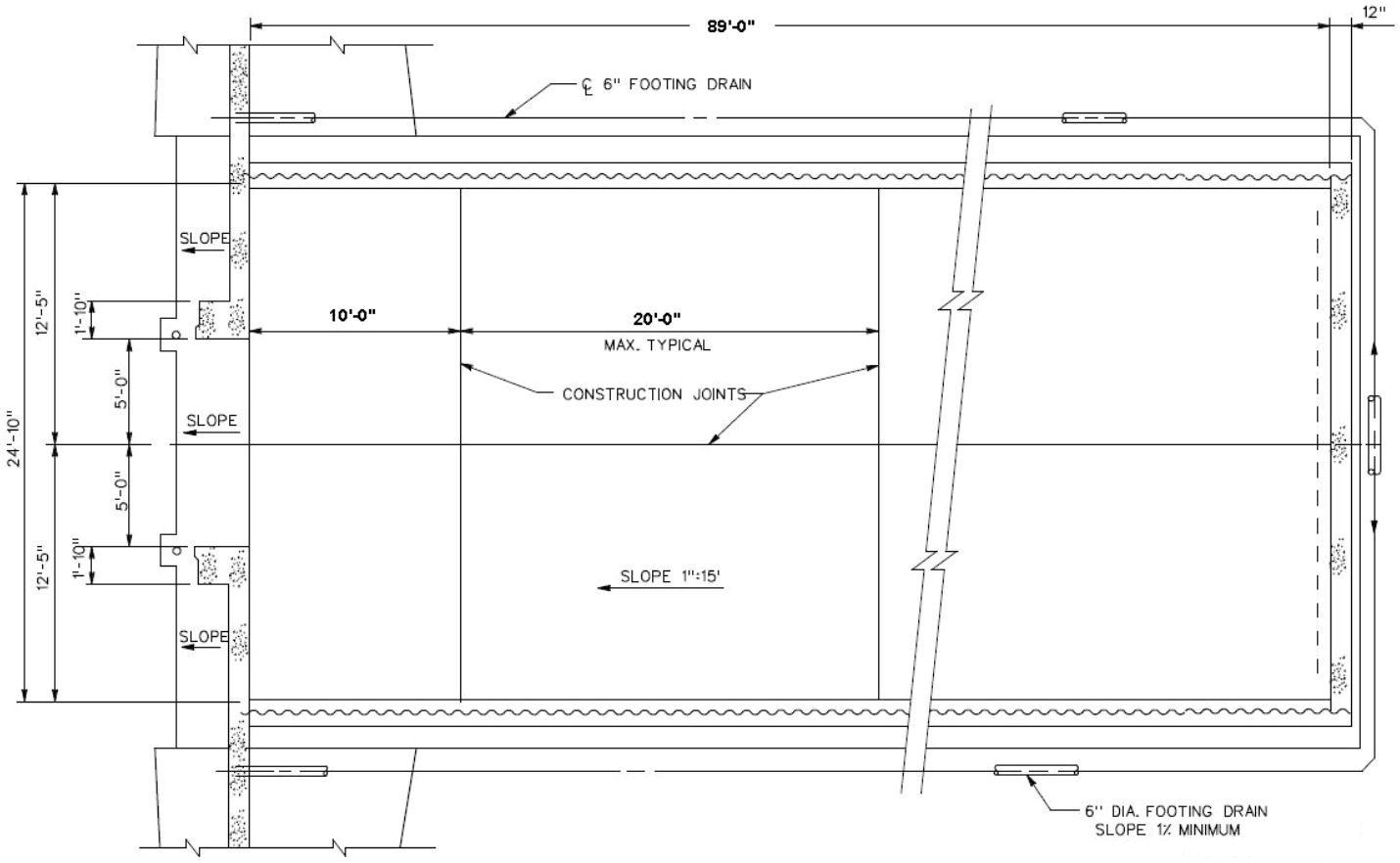
The profile of each igloo is a standard "steel oval-arch" design. As opposed to the conventional semi-circular arch magazines, the steel oval-arch design provides for ample personnel headspace and operational clearance room near the side walls.

Figure 4 Igloo Key Dimensions and Features, Front Elevation View



2. JUSTIFICATION FOR CHANGE (continued

Figure 5 Igloo Key Dimensions and Features, Foundation and Slab Plan View



Enclosure 4.1 of this modification proposal includes more complete igloo design information.

2. JUSTIFICATION FOR CHANGE (continued)

Table 2 Container Storage Area Operating Requirements

Utah Administrative Code Citation	Applicable Requirement Summary	Justification for meeting the requirement
R315-8-9.2	Defective, leaking, or severely corroded containers shall have their contents transferred to a container in good condition.	All existing procedures regarding the conditions of containers will extend to containers stored in Area 10 igloos.
R315-8-9.3	The container must be of a material that is compatible with the waste within it.	All existing procedures regarding the compatibility of containers and waste will extend to containers stored in Area 10 igloos.
R315-8-9.4(a)	A container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste.	All existing procedures regarding maintaining containers "closed" will extend to containers stored in Area 10 igloos.
R315-8-9.4(b)	A container holding hazardous waste shall not be opened, handled or stored in a manner which may rupture the container or cause it to leak.	All existing procedures regarding opening, handling and storing containers will extend to containers stored in Area 10 igloos.
R315-8-9.5	At least weekly, the owner or operator shall inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.	Inspection forms similar to the existing inspection form for the S-2 warehouse will be added to the RCRA Permit and inspections will be performed weekly by procedure. Completed inspection forms will be entered into the facility operating record.
R315-8-9.6 (Non-Liquids)	The container storage area shall have, for containers with no free liquids, 1) a floor that is sloped to collect precipitation "run-on" OR 2) all containers elevated off the floor (such as on a pallet)	All containers, whether free-liquid bearing or not will be elevated off the floor by the use of conventional pallets, secondary containment pallets, or similar means. The igloo floor slopes toward the door end and will be inspected weekly for precipitation run-on.

2. JUSTIFICATION FOR CHANGE (continued)

Table 2 Container Storage Area Operating Requirements (continued)

Utah Administrative Code Citation	Applicable Requirement Summary	Justification for meeting the requirement
R315-8-9.6 (Applicable to free-liquid AND F020, F021, F022, F023, F026, and F027 waste-bearing containers only. None of these F-coded wastes will be stored in the igloos.)	The container storage area shall have, for containers with free-liquids and specific "F" wastes, a secondary containment system that: 1) has a base that is without cracks and gaps,	TOCDF will provide secondary containment for all free-liquid bearing containers (and specific "F" waste codes) through the use of either commercially-available or engineered secondary containment pallets, drip-pans or enclosures that meet these requirements. The commercial and engineered systems will be used in a manner consistent with manufacturers' recommendations and/or engineers' specifications.
	2) impervious to leaks, spills, and precipitation unless containers are elevated,	
	3) has sufficient capacity to contain 10% of cumulative containers' liquids AND contain the volume of the single largest container,	
	4) is protected from precipitation "run-on" OR has ample capacity to accommodate it,	The igloos are designed and constructed specifically to protect their contents from precipitation run-on. Weekly inspection will verify the absence of accumulated liquid or assure that any liquid is removed in a timely manner.
	5) is emptied of accumulated waste or run-on in a timely manner so as not to overflow its capacity.	
R315-8-9.9	At closure, waste shall be removed from the containment system and the system shall be decontaminated.	Waste will be removed from the igloos and the containment systems removed or decontaminated. However, final RCRA closure will be formalized as part of the overall DCD final closure plan Attachment 5 of the DCD RCRA Permit. TOCDF's closure plan will be revised accordingly.
R315-8-9.10	The hazardous waste shall be managed in accordance with the air emissions standards of R315-8-17, R315-8-18 and R315-8-22.	See following three rows.
R315-8-17	Required Compliance with the Air Emissions Standards for Process Vents (40 CFR 264 Subpart AA)	Process vents and piping-related equipment will not will not be in hazardous waste service within the igloos under this modification. Subparts AA and BB do not apply.
R315-8-18	Required Compliance with the Air Emissions Standards for Equipment Leaks (40 CFR 264 Subpart BB)	

2. JUSTIFICATION FOR CHANGE (continued)

Table 2 Container Storage Area Operating Requirements (continued)

Utah Administrative Code Citation	Applicable Requirement Summary	Justification for meeting the requirement
R315-8-22	Required Compliance with the Air Emissions Standards for…Containers (40 CFR 264 Subpart CC) Reference RCRA Permit Module X	Containers larger than 26 gallons ($0.1m^3$) will meet the Container Level I standards for air emissions control specified in 40 CFR 264.1086(c)(1)(i) or (ii) or (iii). The vast majority of the containers are expected to comply with (i) as DOT-compliant containers. Containers larger than 121 gallons ($0.46m^3$) will not be stored in the igloos if they are "in light material service" (high volatile organics) as defined by 40 CFR 265.1081 UNLESS they have been demonstrated "vapor-tight" in accordance with 40 CFR 264.1086(d). Alternatively, the requirements of R315-8-22 may be exempted by demonstration in accordance with Permit Condition X.G.2.

Container Management Strategy

The management strategy proposed for the Area 10 igloos is very similar to the strategy currently in place for the S-2 Warehouse. Like S-2, the igloos do not possess all of the floor features that would enable them to function as secondary containment. For this reason, all liquid-bearing (and specified "F" coded) waste containers will be placed upon commercially-available or engineered secondary containment pallets or within enclosures. Each secondary containment system will be capable of holding the entire contents of the single largest liquid-bearing container that it serves AND will be capable of holding ≥10% of the entire cumulative liquid-bearing waste that it serves. A common example would be eight-each 55-gallon drums stacked on a secondary containment pallet capable of holding ≥60 gallons. In all cases, the manufacturer's ratings or the engineered specifications for the secondary containment system will be complied with.

2. JUSTIFICATION FOR CHANGE (continued)

Containers that possess no free liquid are not required to be placed upon a secondary containment system. However, they are required to be elevated off the floor in order to prevent prolonged exposure to standing and/or undetected liquids. All containers will be elevated off the floor, either by secondary containment system (for free-liquids), a pallet or similar device.

Container Storage Capacity of Igloo 1634

Although Igloo 1632 currently has equipment installed within it, TOCDF seeks to conservatively permit Igloo 1632 to its full capacity. This will provide regulatory consistency between the igloos, simplify the procedures and inspections, provide for flexibility of future use of Igloo 1632, and provide precedent for additional igloos if necessary (via another permit modification). For this purpose, the derivation of the total permitted volumetric capacity is based upon an igloo with no permanent equipment installations, such as Igloo 1634.

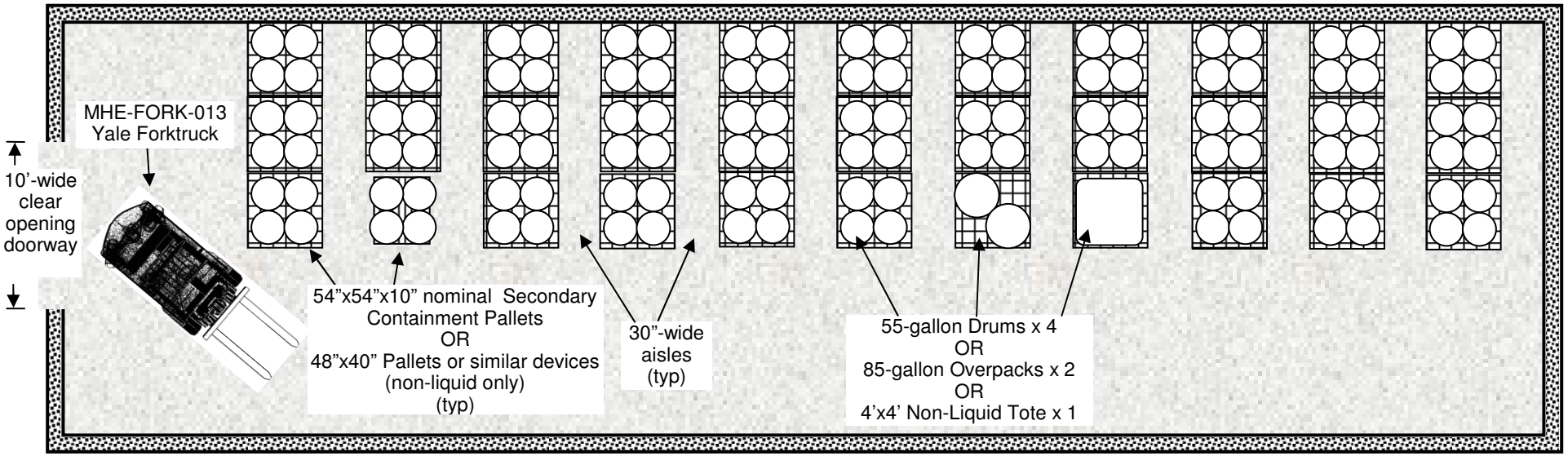
It should be noted that although specific configurations of pallets are assumed for storage capacity calculation, TOCDF will neither be limited to that specific configuration nor that specific container type only. For example, if TOCDF desires to store tools and supplies in the igloo, they may block off storage rows and thus self-limit the use of the igloo's capacity for hazardous waste. However, a 30"-wide access aisle to the containers will be maintained for inspection purposes regardless of the orientation of the pallets. In addition, the total cumulative volume of waste stored in the igloo will not exceed the permitted capacity. The weekly inspection will verify these as well as secondary containment for liquid-bearing containers.

For the purposes of determining the storage capacity (gallons volume) of Igloo 1634, the following functional container stacking configuration was considered:

1) 55-gallon drums are stacked four-each on 54"x54" secondary containment pallets or smaller.
2) 55-gallon drum pallets are stacked a maximum of two-high.
3) 11 rows of double-stacked 55-gallon drum pallets combine for a total of 66 pallets and 264 drums.
4) Sufficient clearance is provided for forktruck MHE-FORK-013 to access drums
5) Flexible access to drums at the rear as well as the front of the igloo is necessary (as opposed to more space-efficient stacking that significantly limits access flexibility).
6) A 30"-wide access aisle to all containers is necessary for inspection and fire access.

2. JUSTIFICATION FOR CHANGE (Continued)

Figure 6 Simplified Igloo Hazardous Waste Container Storage Configuration for Capacity Calculation



2. JUSTIFICATION FOR CHANGE (Continued)

RCRA Closure of the Igloos

In addition to being a TOCDF RCRA co-permittee with EG&G Defense Materials, Inc., the Chemical Materials Agency (CMA) is responsible for the overall DCD RCRA Permit, which includes Area 10 Operations. All Area 10 igloos must be evaluated for closure based upon their entire operational hazardous waste management activities history. CMA is currently in the formalization phase of the overall Area 10 Closure Plan, which will include the final closure of Igloos 1632 & 1634.

Upon completion of TOCDF activities within Igloos 1632 & 1634, TOCDF will remove all hazardous waste and decontaminate or remove contaminated containment system components, equipment and structures.

2. JUSTIFICATION FOR CHANGE (Continued)

IMPACT TO THE TOCDF

The addition of Igloos 1632 and 1634 to the list of TOCDF-permitted container storage units will not adversely impact the ability of TOCDF to protect life and the environment.

Environmental Impacts

The addition of two igloos to the existing 59 permitted storage igloos at Area 10 storing TOCDF secondary waste may increase the amount of hazardous waste that is in storage at any given time. The Area 10 igloos are robustly designed to function as storage units.

TOCDF Personnel Impacts

An increase in permitted container storage capacity will increase the administrative workload associated with managing the additional containers. The addition of two permitted container storage units will also increase the number of weekly direct visual inspections performed by TOCDF personnel.

Contingency procedures requiring the response of the DCD Fire Department will remain the same. TOCDF will assume the responsibility of other types of emergency response such as spills and medical attention. This has the potential of increasing the scope of TOCDF emergency responses. All activity at DCD Area 10 takes place during daylight hours only (per Army regulations), which would eliminate the need for TOCDF emergency response at night.

Physical TOCDF Impacts

The formal addition of Igloos 1632 and 1634 to the TOCDF RCRA Permit increases the size and scope of the TOCDF portion of the DCD Facility.

3. PERMIT CHANGE PAGES

Change Pages in Permit Body

Module III
Pages 1, 4 and 5

Appendix B
Page 1

Tables
Pages 2 and 3

Change Pages in Permit Attachments

Attachment 1
Pages 5, 6, 8, 12, 13, 15 and 17

Attachment 4
Page 3

Attachment 5
Pages 4, 6, 9, 10, 16 and 35

Attachment 5 Inspection Log Sheets
Page W-20

Attachment 8
Pages 4, 8, 9, 16 and 17

Attachment 9
Pages 8, 16, 30, 61, 112 and 113

Attachment 10
Pages 1, 6 and 7

Attachment 12
Pages 1, 7, 10, 23, 24 and 26

Changes to Permit Drawings

None

4. ENCLOSURES

Drawings

4.1	Army Corps of Engineers	Magazine, Steel Oval-Arch, Earth Covered, Plan and Sections	421-80-03, S-1
4.2	Army Corps of Engineers	Magazine, Steel Oval-Arch, Earth Covered, Miscellaneous Details	421-80-03, S-4

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